REMARKS/ARGUMENTS

In the Office Action dated November 16, 2005, in the above-captioned application, the Examiner issued a Restriction Requirement identifying the following groups of claims as being drawn to potentially distinct inventions:

Group I. Claims 1 – 16, drawn to a microfluidic device, classified in class 422, subclass 100 and

Group II. Claims 17 - 20, drawn to a method of trapping particles, classified in class 436, subclass 130.

The Examiner asserted that these inventions may be regarded as independent and distinct from one another because they are related as a process and an apparatus for its practice. Claims 17, 18, 19 and 20 have been withdrawn as a result of the Examiner's restriction requirement, as communicated in a telephone conference dated October 8, 2005. Applicant provisionally elected Group I comprising claims 1-16 for continued prosecution within this application. Applicant hereby confirms that provisional election. Applicant reserves the right to present claims 17, 18, 19, and 20 in a divisional application.

Claims 1-4, 6-10, 12-14, 16-20 remain in this Application.

Claims 5, 11 and 15 have been canceled.

Claims 1, 4, 6, 7, 12 and 14 have been amended.

Claims 21-23 are new.

1. Drawings

Applicant gratefully acknowledges the Examiner's acceptance of the formal drawings as indicated in the accompanying form PTOL-326.

2. Claim Interpretation

Claim 11 has been canceled.

Claim 15 has been canceled.

Claim 16 is dependent from claim 14 which has been amended and in its amended form positively claims the optical detector.

3. § 102 Rejections

The Examiner has rejected claims 1–3, 5-6, 8, 11-12 and 14–16 under 35 U.S.C. § 102(b) as being anticipated by Swedberg, U.S. Patent No. 5,085,756.

The Examiner asserts that Swedberg teaches a capillary tube having an inlet and porous frit/filter. The Examiner also asserts that Swedberg teaches that capillaries can be made of fused silica or borosilicate glass (transparent materials).

The Examiner has also rejected claims 1–3, 5-6, 8, 11-12, and 14-16 under 35 U.S.C. § 102(b) as being anticipated by He, et al, U.S. Publication No. 2003-0049862. The Examiner asserts that He discloses a microfluidic device comprising microcolumns which may be made of glass or polymer materials, and that each microcolumn can comprise a filter membrane.

Although Swedberg teaches that capillaries can be made of materials which are transparent, and He teaches that microcolumns can be made of materials which are transparent, the porous filter disclosed by Swedberg and the filter membrane disclosed by He are different than the porous filter disclosed in the present invention with respect to structure and uniformity of that structure as detailed below.

Swedberg discloses the use of porous frit, gel or a silica plug as the filtering means in Column 4. The randomness of the porosity of these materials would be incapable of providing the uniformity necessary to accomplish the filtering achievable by the present invention. The porosity provided by the frits, gels and sintered silica disclosed by Swedberg would be randomly sized and randomly dispersed as compared to the defined holes provided by the plurality of smaller capillaries disclosed by the Applicant. The internal cross-sectional dimensions of the holes of the present invention can be controlled by selecting capillaries having the proper dimensions to trap particles of predetermined size. Moreover, the assembly of these capillaries into a filter provides a more uniform structure than the materials used in the Swedberg filter could provide. In the Swedberg filter, the cross-sectional dimensions of the holes would vary, making the trapping of particles of a predetermined nominal size difficult or by chance. Similarly,

the He device discloses a porous substrate or filter membrane in paragraph [0056] incorporated into a top or remote major surface of a microcolumn (transparent capillary) and in paragraph [0059] a modular approach to arranging the microcolumns is described. The use of a plurality of smaller capillaries to produce a porous filter associated with the transparent capillary is not disclosed in the He reference. In the present invention, the holes are provided by the smaller capillaries which are distinct and uniform with respect to the predetermined size of the particles being trapped. Also, the porous filter of the present invention could be made so as to capture a monolayer of particles where the trapped particles are aligned in a serial fashion, thereby providing particle by particle separation. The present invention provides an increased degree of control in making a filter specifically structured to trap particles of a predetermined nominal size. Neither the Swedberg device nor the He device discloses a filter with such structure or capability. Claims 1 and 14 have been amended to emphasize this structure and uniformity of this structure in the present invention. Claims 2 and 3; claims 4, 6 and 7 (currently amended); claims 8, 9, 10, 12, 13, 16; and claims 21, 22 and 23 (new) include this emphasis on the above described structure and uniformity of the structure. Claims 5, 11 and 15 have been canceled.

As for claim 12, the Examiner asserts that the particles are not a positively recited element of the invention and that the filter is structurally capable of retaining particles of some size. However, Applicant argues that claim 12, as currently amended, further defines the dimensions of the transparent capillary with which the porous filter is integrated as opposed to the dimensions of either the porous filter itself or the particles. The transparent capillary is positively recited in claim 1 from which claim 12 is dependent. The reference to the particles provides a size relationship between the particles being trapped by the porous filter and the dimensions of the transparent capillary. Claim 12 has been amended to clarify this relationship.

4. § 103 Rejections

The Examiner has rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Swedberg or He in view of Chu, et al (US 5,985,164), claim 7 under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Swedberg

or He in view of Shukla, et al (US 6416716), claim 10 under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Swedberg or He in view of Cole, et al (US 5879949), and claim 13 under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Swedberg or He in view of Roach, et al (US 20010005489).

In order to establish a prima facie case of obviousness, Swedberg or He in view of Chu, Shukla, Cole or Roach must teach or suggest all of the claim limitations. As discussed above, currently amended claim 1, from which claims 4, 7, 10 and 13 are dependent, is now in allowable form, since it includes the limitation of the filter having a plurality of smaller capillaries each having internal cross-sectional dimensions smaller than the nominal size or range of sizes of the particles, assembled such that the smaller capillaries trap the intended particles. Therefore, claims 4, 7, 10 and 13, being dependent on claim 1, also contain this limitation, while Swedberg or He in view of Chu, Shukla, Cole or Roach do not teach this limitation; so the rejection of claims 4, 7, 10 and 13 as being obvious is now moot.

Applicant believes that no extension of time is necessary to make this Response timely. Should Applicant be in error, Applicant respectfully requests the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Response timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to Deposit Account 03-3325.

Please direct any questions or comments to the undersigned.

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Date

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